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BLUE-EYED COCKATOOS IN NEW BRITAIN

by Roger Wilkinson

Chester Zoo has held Blue-eyed Cockatoos *Cacatua ophthalmica* since 1966 when five that had been collected on New Britain were received at Chester together with a larger consignment of birds from Papua New Guinea. Since then Chester Zoo has successfully reared 40 youngsters and established an international reputation as a breeding centre for the Blue-eyed Cockatoo. Chester Zoo holds the *European Studbook* for the Blue-eyed Cockatoo and effectively co-ordinates the European zoo population. Young from Chester have been sent on loan to nine other collections and form the core of a co-ordinated international breeding programme.

The Blue-eyed Cockatoo is endemic to New Britain; it occurs only on this one island and nowhere else in the world. New Britain is a mountainous volcanic island and the largest of the group of islands forming the Bismarck Archipelago situated off the north-east coast of Papua New Guinea. Exceedingly rare and highly prized in aviculture there has been uncertainty over its wild status with contradictory reports received from recent visitors as to its abundance. Other island cockatoo populations have been heavily impacted by habitat changes and through these parrots being trapped for the live bird trade. Both Philippine Red-vented Cockatoos *C. haematuropygia* and Yellow-crested Cockatoos *C. sulphurea* are now critically endangered. The small number in aviculture suggests that trapping for the bird trade has, to date, not been a serious threat to the Blue-eyed Cockatoo.

Chester Zoo through a generous grant from Brian and Elizabeth Livingstone was recently able to fund a field study of the Blue-eyed Cockatoo on New Britain. John Pilgrim under the supervision of Dr Stuart Marsden from Manchester Metropolitan University worked in New Britain from December 1998 to April 1999. John was based in East New Britain and surveyed two areas around Wide Bay, initially around Mu and later in the Marunga/Masarou area. Blue-eyed Cockatoos were found to be not uncommon in primary and selectively logged forest but considerably less common in forest gardens. At one site a group of 40 cockatoos was observed on one occasion. In the absence of heavy trapping pressure on Blue-eyed Cockatoos and given their tolerance of selective logging and the current extent of forest on New Britain it was concluded that the Blue-eyed Cockatoo is not currently threatened.

Along with a party of birdwatchers from England I was able to make a short four day visit to West New Britain in mid-August 2001 and offer some observations made as a result of that visit. During this period we were based to the west of Hoskins, at Walinde Plantation Resort, north-west of

*Roger Wilkinson***Blue-eyed Cockatoo**

Kimbe and on the eastern coast of the Willaumez Peninsula, and mainly visited areas in the vicinity of Walinde. One day we also travelled some distance east of Hoskins to the Pokili Wildlife Management Area.

Blue-eyed Cockatoos were not uncommon in what appeared to be disturbed forest habitat near Kimbe close to the Kulu River. Six birds were seen there in the late afternoon on August 18th. On the following evening, August 19th, at Kulu Ridge, again in what appeared to be disturbed forest, our birdwatching group had at least twenty sightings of single or small groups

of Blue-eyed Cockatoos. It was estimated these sightings represented at least 15 different individual birds.

One tree held a group of nine birds in a pre-roost gathering. These made themselves conspicuous by their calls and displays. Their displays were similar to those I had previously observed in birds at Chester Zoo in that the crest feathers were raised to expose the bright yellow feathers below. One displaying bird, whilst perched in this tree, repeatedly rotated forwards on its branch, bowing as it did this. Additionally, whilst standing upright and raising its crest feathers it simultaneously extended its wings laterally and stretched these fully open so exposing the bright yellow under-wings.

On a subsequent evening at the same site on Kilu Ridge, I saw at least 10 Blue-eyed Cockatoos. Again several gathered together in a tree and display was observed. One bird repeatedly fell backwards clinging to its perch to momentarily hang upside down before swinging back to an upright position. Display was also seen to involve not only raising the crest feathers but at the same time also spreading and extending forwards the cheek feathers to greatly increase the apparent size of the head.

Six Blue-eyed Cockatoos were seen on August 20th at Pokili Wildlife Management Area in an area of undisturbed forest and on August 21st three were seen in selectively logged forest at Garu Wildlife Management Area. In both cases the reduced visibility of cockatoos in denser and taller forests in these areas may have resulted in relatively fewer sightings there than in the more disturbed areas previously visited.

No Blue-eyed Cockatoos were seen during our journeys through oil palm plantations. West New Britain is Papua New Guinea's biggest timber and palm oil exporter. Palm oil plantations represent a major source of income and a poster in Port Moresby airport placed by Pacific Rim Plantations indicated that palm oil is Papua New Guinea's fastest growing agricultural success story. It may be predicted that the amount of forest cleared for planting may be expected to expand in the near future. The long term viability of Blue-eyed Cockatoo populations in the wild will depend on New Britain retaining both sufficiently large areas of forest and ensuring that the present low level of trapping of these birds does not escalate.

References

- Lipscomb, A., Mc Kinnon, R. and Murray, J. 1998. *Papua New Guinea*, 6th edn. Lonely Planet Publications, Hawthorn, Australia.
- Marsden, S.J., Pilgrim, J.D. and Wilkinson, R. 2001. Status, abundance and habitat use of Blue-eyed Cockatoo *Cacatua ophthalmica* on New Britain, Papua New Guinea. *Bird Conservation International* 11:151-160.
- Wilkinson, R., Pilgrim, M., Woolham, A., Morris, P.I., Morris, A. and West, B. 2000. Husbandry and breeding of Blue-eyed Cockatoos *Cacatua ophthalmica* at Chester Zoo 1966-1998. *International Zoo Yearbook* 37:116-125.

BREEDING THE HOUSE CROW *Corvus splendens*

by P. J. Cleeton

The House Crow as it tends to be called now, rather than the Indian House Crow, is normally found in Pakistan, India and Sri Lanka, including the Maldiva and Laccadive Islands, Bangladesh and the Himalayan foothills of Nepal and Bhutan, eastwards through Burma to extreme southern China, it is a vagrant to extreme southern Afghanistan (Madge and Burn, 1999). In addition it has been introduced into or found its way to a number of other countries, mainly on major shipping routes. It recently bred in the Netherlands and concern has been expressed that it may reach the UK. It is larger than the Jackdaw *C. monedula* but smaller than the Hooded Crow *C. corone*. Its call is a rather harsh 'caaa caaa', similar to that of the Raven *C. corax*.

Five House Crows were imported from Africa about six years ago for the making of a natural history film. When filming was completed the five crows went to The Tropical Bird Gardens, Rode, in Somerset, where they were kept together in a group. As the group showed no interest in breeding, Mike Curzon decided he would keep just a pair. In 1998, he phoned me and with his typical generosity, offered me the other three, two males and one female, for my collection.

The trio is housed in an aviary 20ft long x 10ft wide x 7ft high (approx. 6m long x 3m wide x 2.1m high), one of a row of seven flights all of which are the same size. Housed on one side of the House Crows' aviary is a pair of Ravens and on the other side is a pair of Yellow-billed Hornbills *Tockus flavirostris*. A half-open-fronted nest-box and a platform covered with *leylandii* trimmings were provided as possible nest sites.

In the wild this species feeds on small mammals, insects, young birds and eggs, fruit, a variety of grains, and any scraps it can scavenge. I find that chopped chicks, minced (ground) meat, dog chow, fruit and mealworms, etc. seem to keep them in good condition.

In 1999 a nest was built in the nest-box. It was built using a variety of twigs and grasses, and two chicks were hatched, but died after one week. Last year they built a large and impressive nest on the platform and laid five eggs in it. All five hatched and a variety of livefoods and pinky mice were provided. However, on the morning of the eighth day I went down and found all of them dead on the floor. This year they built another nest on the platform and laid four eggs in it, but as they did not seem very keen on incubating them I decided to put the eggs in an incubator.

Two proved to be clear, one contained a dead chick, and the other hatched. The chick was fed approximately every two hours from 7.00am to 9.00pm.

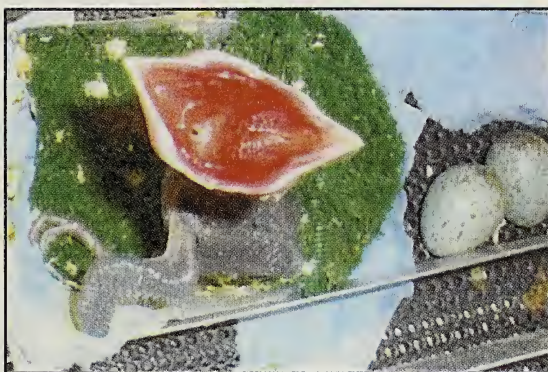
*Chris Isles***One of the breeding pair**

It was fed rat pups to which were added SA37 or ABEDEC vitamin and mineral supplements. They were diced very fine and kept in water. The chick was housed in a brooder set at 37°C (98.6°F) until its pin-feathers came through, after which the temperature was reduced slowly. It was kept on astro turf, as I find that keeping young birds on this helps prevent them developing splayed legs.



Chris Isles

Chick at about 10 days old



Chris Isles

Chick and two unhatched eggs

Mike, as the crow has been named, is fully weaned now and he or she will later be introduced into the group.

Reference

Madge, S. and Burn, H. 1999. *Crows and Jays*. Paperback Edition, Helm Identification Guides. Christopher Helm/A. & C. Black, London .

As described above, the House Crow *Corvus splendens*, has been bred by P. J. Cleeton. This is probably the first successful breeding of this species in Great Britain or Ireland. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

NECKLACED AND OTHER LAUGHING THRUSHES

by Philip Schofield

I can not claim to have any great knowledge about laughing thrushes having owned only three individuals and not yet tried to breed any. However, a recent observation of predatory behaviour, referred to below, has fired me to record a few personal notes about the group.

Gruson (1976) listed 44 species of laughing thrushes in the genus *Garrulax*. There may though be 45, as Long et al. (1994) suggested that one of the subspecies of the Yellow-throated Laughing Thrush *G. galbanus* might be regarded as a full species. For many years British aviculture was effectively restricted to two species, the White-crested *G. leucolophus* and the White-throated *G. albogularis*, with others being imported only rarely. Boosey (1956), a leading importer during the pre- and immediately post-Second World War years, gave detailed treatment only to the White-crested with just a passing mention of the White-throated species. Sclater (1879) listed eight species (three of which were not then included in the genus *Garrulax*) as having been in the London Zoo collection. However, there were effectively only the White-crested and White-throated Laughing Thrushes in UK aviculture when I first encountered this group back in the mid-1960s. This was at the Norfolk Wildlife Park, where they shared a planted aviary with Black-winged Stilts *Himantopus himantopus* and Green-winged Doves *Chalcophaps indica*. The overriding impression was how energetic and noisy *Garrulax* species are as a group in a large enclosure. About the same time, I remember seeing a single White-crested Laughing Thrush that shared a small aviary with a Pagoda Starling *Temenuchus* or *Sturnus pagodarum*. Very much a contact animal, the laughing thrush invariably roosted with a wing spread over the starling, in the absence of a more appropriate partner.

In July 1978, I saw Streaked Laughing Thrushes *G. lineatus* in the wild on several occasions on the Margalla Hills north of Islamabad, Pakistan. I remember them foraging on or near the ground in secondary scrub (the area had been overgrazed at one time by domestic livestock and then allowed to revert to a more natural state following their removal), and being difficult to keep in view for any length of time.

In 1987, a friend bought two recently imported White-crested Laughing Thrushes. These appear to have thrived ever since, and show no sign of old age 14 years later. They have lived on coarse grade commercial softbill food, along with fruit and mealworms each day. Aviary companions over the years have included Golden Pheasant *Chrysolophus pictus*, Silver Pheasant *Lophura nycthemera*, Eastern Rosella *Platycercus eximius* and

Redrump Parrakeet *Psephotus haematonotus*, all of which have bred successfully without any friction, although the pheasants were separated when they had chicks. At one time there was also a group of Senegal Doves *Streptopelia senegalensis*, apparently all females, which likewise were not molested. Latterly a single Nanday Conure *Nandayus nenday* has also lived happily with the laughing thrushes. This sort of co-existence requires plenty of space. In the early days the laughing thrushes lived in an aviary about 20ft x 15ft (approx. 6m x 4.5m); this has now been trebled in size. The parrakeets have prevented much plant growth, which may explain the lack of nesting behaviour by the laughing thrushes, which have flourished through some relatively severe winters with only overhead cover and shelter from wind and rain. The only indisposition has been an apparent infestation of gapeworms *Syngamus* spp., restricted to one of them and quickly cured with a game bird worming powder. As one would expect, these are a noisy pair of birds, whose cackling laughter is at its loudest during a summer rainstorm.

With the shift of bird imports from India to China and other countries in that region, a much wider variety of species has become available. The Foreign Bird Federation's *Breeding Register* listed a dozen (12) species as having been bred in the UK between 1992 and 1995. I acquired my first laughing thrush at a local bird sale in February 1998. It is a female Greater Necklaced *G. pectoralis* whose mate had escaped through the feeder hole of the parrot cage in which they were being transported. Left with the single bird, the owner was pleased to get rid of it. Initially its plumage was rough, and the bird was very nervous. I removed a metal closed ring, which came off easily, so was not necessarily evidence of captive breeding. I took it off because it was sufficiently loose fitting to catch on twigs and endanger the bird. June of that year found my single laughing thrush sharing an aviary some 9ft (approx. 2.7m) square with a pair of Indian Ring-necked Parrakeets *Psittacula krameri*. Despite the latter, there was a substantial *Lonicera nitida* bush in which the laughing thrush spent much of her time. As an importer was offering this species for sale, I ordered a male, having telephoned first to ensure that they were indeed Greater Necklaced Laughing Thrushes. When the bird arrived, it looked a bit small, but it was not until its release into the aviary that I could see that the new bird was a Lesser Necklaced Laughing Thrush *G. monileger*. This was confirmed by reference to King et al. (1975), to which readers are referred for detailed descriptions (p. 310) and illustrations (pl. 44). *G. pectoralis* appears to be about one-third larger, although only 1in (2.5cm) more in overall length (13in (33cm) compared to *G. monileger* which is 12in (30.5cm) long). The two other most obvious distinctive features are the striated grey cheek patches of *G. pectoralis* and the iris colour (not mentioned by King et al.) which is dark brown, whereas that of *G. monileger* is pale orange. In Grimmet et al. (1999) both species

are depicted (p.301) with brown eyes. The two birds were instantly compatible, and roosted pressed together that night. Having contacted the importer about his misidentification, he let me have a second *G. monileger* at a reduced price, and the three appeared to agree together, although I cannot remember their roosting behaviour as a trio. I hoped they might attempt to breed, with the single *G. pectoralis* helping to feed any young produced. Such a cooperative effort occurred at London Zoo, where a pair of White-throated helped feed the single youngster of a pair of Black-faced *G. perspicillatus*, both before and after it fledged (Yealland, 1965). Some eight weeks later upon returning from a short holiday, under a bush I discovered (unnoticed by the somewhat myopic friend who had kindly cared for the collection in my absence) the decomposed body of the believed female Lesser Necklaced Laughing Thrush, with no identifiable cause of death. I have been unable to obtain mates for the two survivors, and they remain a devoted couple, never more than a short distance apart. The bird that died had paler, more yellowy eyes than the surviving *G. monileger*, which could equally be a sexual, age or even individual difference.

The aviary has been extended to some 30ft (approx. 9m) long, and is currently shared by a male Grey Peacock Pheasant *Polyplectron bicalcaratum*, a group of young Golden Pheasants and a pair of Fulvous Whistling Ducks *Dendrocygna bicolor*. The Ring-necked Parrakeets have been joined by a pair of young Alexandrine Parrakeets *P. eupatria* and a Peach-faced Lovebird *Agapornis roseicollis*. The only aggression shown by the laughing thrushes to any of these is an occasional dive at the lovebird by the female *G. pectoralis*. This appears to be more playful than anything else, and is never followed through into an attack. The lovebird, a very assertive individual which has been seen to bluff the Alexandrines away from food, does not seem upset by these attentions. I would not trust *Garrulax* spp. with anything smaller, despite Lindholm's (1989) reference to a single White-crested living peacefully with Blue-capped Cordon-bleus *Uraeginthus cyanocephalus* at Cincinnati Zoo - significantly perhaps, he did not actually see the latter. A recent addition to my enclosure, awaiting breeding quarters elsewhere, is a pair of Common Mynahs *Acridotheres tristis*. The male *G. monileger* will set about these if they approach him too closely, but otherwise they are ignored. Before the Fulvous Whistling Ducks were introduced, a pair of Mandarin Ducks *Aix galericulata* nested in this aviary and on several occasions one or more of their eggs were found out of the nest-box and with holes pecked in them, presumably by the laughing thrushes.

Five parrot beaks have drastically reduced the plant life in this aviary, so plenty of leafy branches are supplied, which the parrakeets strip of leaves and bark while the laughing thrushes and mynahs search them for insects. There are logs on the aviary floor which I turn over every few days to expose

the insect life underneath. The laughing thrushes are invariably on the floor snapping-up woodlice and similar prey before I have left the aviary, and spend a lot of time turning over the litter with their beaks searching for further food items. My laughing thrushes are fed the same diet as that described above for the pair of White-crested Laughing Thrushes, and seem to take anything that is offered in the way of fruit and small invertebrates. Peanuts are relished, and when I run out of softbill food, poultry chick crumbs have been equally acceptable. My distrust of them with smaller birds, stems from an incident at 8.30am on August 27th this year, when I noticed an adult Common Frog *Rana temporaria* inside the aviary wire and apparently looking for a way out. I often see the odd frog in the aviary, and had assumed they always found their own way out again. On my return to the aviary a few minutes later, the Greater Necklaced Laughing Thrush was on the ground killing the frog. Repeated blows were directed at its head, between the eyes. Considerable force was being used, with the bird leaning back before striking each blow, standing with its legs apart to get maximum impact. When the frog ceased to move, the bird began tearing off chunks of flesh and swallowing them. While doing this, the wings were 'shivered' like those of a fledgling when being fed, an indication of extreme excitement perhaps (Harrison (1967) referring to courtship feeding by a pair of White-throated Laughing Thrushes, described wing-shivering by the female). The frog was not held down at first, until the bird appeared to put her left foot on it accidentally, and found it made it easier to eat it, and then used the foot more purposely to hold the frog steady while wrenching bits off. When some pheasants started to show an interest, the laughing thrush took her prey into the right angle of some logs, where (still on the ground) she successfully kept these competitors at bay. During all this, the Lesser Necklaced Laughing Thrush was very animated, fluffing out his feathers, singing and jumping up and down, while keeping about 1m (3ft 3in) from his mate.

While not reacting to rain showers in the same way as the White-crested species, my male Lesser Necklaced Laughing Thrush sings persistently, particularly early in the morning, a loud, repeated phase of seven notes, while I have heard only a jay-like scolding from the Greater, in moments of alarm. As with the White-crested species, my laughing thrushes seem unaffected by extremes of weather. Although lacking an enclosed shed, ample protection from wind and rain is provided by a combination of corrugated plastic sheeting, bundles of reed and growing ivy. Bathing is a daily activity, usually in the overflow of the aviary pond when the water is renewed.

With the variety of laughing thrush species available recently, the opportunity exists to establish self-sustaining populations; with this in mind,

I will try to match-up my two birds with more appropriate partners. The Yellow-throated and Red-tailed *G. milnei* are two of the 20 passerine species selected for breeding programmes in British zoos by the Passerine Taxon Advisory Group. This reflects their desirability as aviary subjects, for both public and private collections.

References and bibliography

- Boosey, E. J. 1956. *Foreign Bird Keeping*. Cage Birds, London.
- Coles, D. 2000. *Management of Laughing Thrushes in Captivity*. D. Coles, Lower Basildon.
- Coles, D. 1979. Breeding the Red-headed Laughing Thrush at Padstow Bird Gardens. *Avicultural Magazine* 85,1:16-17.
- Foreign Bird Federation. 1995. *Register of Birds Bred in the UK Under Controlled Conditions for the Years 1992-1995*. Foreign Bird Federation.
- Gibson, L. 1982. Breeding the White-crested Jay Thrush. *Avicultural Magazine* 88,3:135-141.
- Grimmett, R., Inskipp, C. and Inskipp, T. 1999. *Pocket Guide to the Birds of the Indian Subcontinent*. Christopher Helm, London.
- Gruson, E. S. 1976. *A Checklist of the Birds of the World*. Collins, London.
- Haines, C. 1989. Breeding the Red-tailed Laughing Thrush *Garrulax milnei* at Padstow Tropical Bird Gardens. *Avicultural Magazine* 95,1:10-13.
- Harrison, C.J.O. 1962. Observations on Rufous-chinned Jay Thrushes. *Avicultural Magazine* 68,1:188-197.
- Harrison, C.J.O. 1967. Some Notes on Babbler Behaviour. *Avicultural Magazine* 73,2:28-33.
- Howston, N. 1983. Breeding the White-browed Laughing Thrush. *Avicultural Magazine* 89,2:63-66.
- Isenberg, A.H. 1970. Breeding the Rufous Laughing Thrush. *Avicultural Magazine* 76,4:143.
- Jeggo, D. (Chairperson). 1997. Passerine TAG (Taxon Advisory Group) Report - 1996. *Avicultural Magazine* 103,1:130-133.
- King, W., Woodcock, M. and Dickinson, E.C. 1975. *A Field Guide to the Birds of South-East Asia*. Collins, London.
- Lieberman, A. 1984. Breeding the Red-winged Laughing Thrush *Garrulax formosus* at the San Diego Zoo. *Avicultural Magazine* 90,2:87-90.
- Lindholm, J.H. 1989. Notes on Aviculture at the Cincinnati Zoo, Ohio, USA. *Avicultural Magazine* 95,4:176-191.
- Long, A., Crosby, C. and Inskipp, T. A. 1994. Review of the Taxonomic Status of the Yellow-throated Laughingthrush *Garrulax galbanus*. *Oriental Bird Club Bulletin* 19: 41-48.
- Mace, M.E. 1994. Notes on Breeding the Black-throated Laughing Thrush. *Avicultural Magazine* 100,2:98-100.
- Pasini, A., Arsuffi, D., Micali, G. and Violani, C. G. 1994. Identification and Captive Breeding of Yellow-throated Laughingthrush *Garrulax galbanus*. *Oriental Bird Club Bulletin* 19:49-50.
- Risdon, D.H.S. 1955. White-crested Jay Thrushes. *Avicultural Magazine* 61,1:19-21.
- Sclater, P.L. (ed.) 1879. *List of Vertebrate Animals now or lately living in Gardens of the Zoological Society of London*. Longmans.
- Simmons, K. E. L. 1962. Jay-Thrushes and Acorns. *Avicultural Magazine* 68,1:182-188.
- Yealland, J. J. 1965. The Breeding of the Masked Jay-Thrush. *Avicultural Magazine* 71,1:8.
- Ward, B. S. 1975. Breeding the Rufous-chinned Laughing Thrush at Winged World. *Avicultural Magazine* 81, 2: 68-69.
- Yeo Kok Hoe, 1969. The Spectacled Jay-Thrush. *Avicultural Magazine* 75,3:79-84.

BIRDS IN A DESERT GARDEN

by Les Gibson

These notes are about the relatively few birds that visited our California desert garden in the small community of La Quinta in the Coachella Valley, 25 miles (approx. 40km) from Palm Springs and 30 miles (approx. 48km) from the Salton Sea. Close to sea level, it lies within a horseshoe of hills, with the opening to the north, and is only 1/2 mile (approx. 1km) from the desert. The average summer temperature for about seven months is 106°F (41°C) with 7.6cm (3in) of rain falling erratically in less than seven days, spread over the year, but with most in late summer. One or two days on either side of the rain the sky is grey, but the other 265 days of the year it is cloudless with relentless sunshine, with on one occasion the temperature going up to 121°F (49.5°C). Global warming affects the desert too, and the last year we were there, only 3.8cm (1 1/2in) of rain fell.

It was wetter in the past 100 years. Building excavations 2 miles (approx. 3km) away downhill revealed the tops of orchard trees that had been buried by silt from a flash flood. A long time ago, the valley used to hold a large lake which was fished by primitive Indians and stone fish traps, now high and dry, can be seen along the former shoreline. Coachella is a mis-spelling of Conchella, the Spanish name for the little shells that were found on the valley floor.

There are three or four small oases in the valley, the largest of which has a good stand of palms, with the old dead fronds hanging haystack-like, almost to the ground, around the trunks. These have become home to a colony of Budgerigars *Melopsittacus undulatus*, which nest in amongst the old fronds, rather in the manner of Quaker or Monk Parrakeets *Myiopsitta monachus*. The Budgerigar's genetic pool gets refreshed periodically as new escapees fly in. Palm seeds are a major food. The valley does not sound like a hospitable place for birds and, was not, until houses and golf courses were built, with their accompanying sprinklers and ponds. A canal brings water from the Colorado River, which is used mainly for irrigation while much of the household water comes from a huge underground lake lying beneath the surface of the former lake.

The garden's stony soil had no low plants and no weeds! There were five local Washingtonia Palms, three of them 4.5m (approx. 15ft) tall and two 9m (approx. 30ft) ones, plus two local Palo Verde (Green Wood) trees. The latter were 7.5m (approx. 24ft) tall, twice the height and bulk of the water-deprived ones growing in the desert. An interesting adaptation of these trees is that all of the wood, including the trunk, is bright green from chlorophyll, which continues to function after the tiny leaves have dried up.

There was also a dense 3m (approx. 10ft) tall Oleander, a big magenta Bougainvillea and a miserable, thirsting Grapefruit tree. The *piece de resistance* was a 4m (approx. 13ft) tall Saguaro Cactus, with limbs more than 30cm (1ft) thick. Outside the wall there were masses of Prickly Pear cacti.

The first birds we noticed after moving in were the Roadrunners *Geococcyx californianus*. These large, ground-dwelling cuckoos are shy in the desert, where their territories are very large, whereas in suburbia they fiercely defend a mere four or five block square. The male is barely larger than the female, more noticeable about the head. The area of blue and orange bare skin behind the eyes is larger and brighter in the male, and he is more pushy and territorial.

Our two were delighted when we moved in and they came right to the open glass door, looking for the hand-outs they had become accustomed to receiving from the previous owners. This had been raw hamburger but we soon substituted this with soaked dog pellets. At first they were puzzled by these, but within a week the male was taking them from our hands using the snatch-and-run method. His mate always hung back but quickly picked up food thrown to her. All the dog food we used to feed the birds was soaked first. Often it dried up in the sun, but was never concrete-hard like it is when taken straight from the bag.

Roadrunners dote on meat, raw or cooked, and are relentless predators. We watched one chase a lizard under the Prickly Pears then stand like a statue for two or three minutes until the luckless lizard thought it was safe to take a look outside. We confess that feeding these birds was in no small part aimed at saving the lizards. Roadrunners have almost no enemies. They face down cats and can outrun, at least to the nearest wall, most dogs. They crouch motionless when a hawk appears, but there never was one big enough to risk attacking them. The only remote threat to them is from the Coyotes *Canis latrans* which roam the streets in the dead of night looking for everything from dog food to cats and Pekinese.

Pairs of Roadrunners part after nesting and usually disappear for one or two months in winter. We suspect they go to a common mate-selecting area for they return around February in pairs. One year, our pair never left and maintained a close liaison, living about two streets apart, and coming separately for food hand-outs. If they arrived at the same time, the male half-heartedly chased away the female, which usually waited over the wall until he had left. In spite of moderate temperatures, 40°F-50°F (5°C-10°C) at night but being very pleasant during the day, winter is a hard time for desert birds. Insects are sparse at the best of times and completely absent then as are the lizards, which are hibernating. Thin young birds from the previous season still without a territory, would be hanging around for days

hoping to snatch some food, risking injury from the resident male, which would often chase a youngster at high speed along the middle of the street.

Mating behaviour was noted, perhaps for the first time. The street was used as a race track and mating ground by the birds which can run at 30kph (19mph). The female was seen to run slowly or walk quickly for about 10ft-12ft (approx. 3m-3.6m) followed closely by the male. His neck was extended forward and his beak was pointing to the ground and holding a piece of dog food. His tail was straight up and wagging slowly from side to side. When the female stopped he jumped 2ft (61cm) into the air and moved his feet as so he was running. This went on for several minutes with the female running back the way she came to the end of the property. Then mating took place. It was not clear which bird ate the dog food, but the male jumped onto the wall for another piece, which was likely presented to the 'lady'.

Their nests were difficult to find especially as they were on someone else's property. The pair was extremely cautious and always approached the nest by devious routes often standing at street corners for a minute or two until the street was clear, especially if they were being watched or followed. We knew the birds were nesting not too far away but they always avoided revealing the exact site, often trotting casually past the nest then returning to it undercover of vegetation. Finally after the chicks had fledged we found the nest three houses away. The birds craftily went past it into the garden and entered the thick Bougainvillea from the house side. The nest was mainly a 14cm (5½in) thick pad of heavy, thorny twigs, surmounted by a rimless, shallow grass-lined depression in the 16.5cm (6½in) diameter top. A new nest is built elsewhere for each new clutch.

Nesting commenced in early spring from February onwards and two broods were the norm. The first young were brought to the garden on April 1st. The young were looked after for about six weeks then driven away. Dog food was placed in a dish on top of the wall along with a large bowl of water which evaporated in two days unless replenished. Because of the irregularity of the natural food supply, the usual clutch of four eggs rarely produced four surviving young, two being average.

One year we provided the birds with a large supply of food throughout the breeding season and just like with the Common or Indian Mynahs *Acridotheres tristis* in South Africa (Gibson, 1996), four broods were raised with four, four, three and two young reaching adulthood. Unfortunately the pair of Roadrunners never built a nest in our garden so we did not know how many eggs were laid.

When old enough to leave the nest, the young came to the garden with one or other parent, mostly it was with the female and sometimes it was with both parents. Several times a day the young were fed with quantities

of dog food then they had a drink of five to 12 sips of water depending on how hot it was. The adult male was seen to eat 14 pieces of hazelnut-sized dog food at a sitting but food for the young in the nest was always carried in the beak. The family returned nightly to the nest or the bush for a period after the young had fledged, but because the nest was not found until the birds had left, the exact details could not be recorded. The female laid again quickly afterwards leaving the male to take care of the young until the second brood hatched, when he then drove away the young of the first brood.

On one occasion a small scraggy chick was brought to the garden by the male. It was the youngest of the final brood the others having either gone off with the female or dispersed. The male took great care of it and it was fed on the wall for at least two weeks longer than usual. As with all young, the chick crouched down and begged insistently while next to the food dish. Later it was driven off rather half-heartedly at first and managed to sneak back and feed itself for a couple of weeks more before the male got serious about driving it away.

Roadrunners do not fly high or long distances. We saw the male fly 3ft-4ft (approx. 1m-1.2m) from the wall up onto the eaves of the house and from there partially glide groundwards over the carport and onto a fence. This 9ft (2.7m) high and 18ft (5.5m) long sortie was the highest and longest flight we had seen. To reach the food dish from the ground a bird would walk to within 1ft (30cm) of the wall and then fly straight up like a helicopter. They did this even when sitting on the thick branch of a tree and were a mere skip away from the wall. Rather than fly across they jumped down to the ground and then flew up.

During the first year we found the Roadrunners interesting but when the next breeding season arrived something happened that made us go off them - almost. In the early spring the Cactus Wrens *Campylorhynchus brunneicapillus* constructed one of several trial nests in the small palm immediately above the food dish, while in the nearby Oleander the Mockingbirds *Mimus polyglottos* were busily building. A month or so later we heard the Mockingbirds clamouring in the street. We looked out to see them dive-bombing an oblivious Roadrunner zipping off with a well-feathered Mockingbird chick, dead and quite bloodied from being banged about.

A week later we observed the male Roadrunner in the crown of the small palm tree where the wrens had built a nest but had not used it. The Roadrunner dropped onto the wall then ran along it to below the next tree in which the Cactus Wrens had a nest with chicks. The Roadrunner waited until he saw one of the wrens by the nest then flew up and clumsily, not being a perching bird, began to poke about. Both wrens jumped around hysterically close by but did not dive at the intruder as the Mockingbirds

had done. The Roadrunner soon found the entrance to the wren's deep nest and managed to extract a chick. There followed the most horrendous spectacle for lacking the beak and claws of a hawk the Roadrunner proceeded to batter the eight to nine-day old chick on the thick stems of the palm fronds, spattering blood all over the place. The Roadrunner then dropped to the large stones on the ground below and as the wrens hopped about calling frantically proceeded to bash the by then dead chick on the stones until it was a bloodied pulp though still in one piece. We wondered how it would be fed to the Roadrunner chicks. Possibly the parents would pull pieces from the carcass but more likely it would be given to one of the Roadrunner chicks to swallow whole. After that we stopped feeding the Roadrunners during the summer but admit to helping them out in the winter when lizards and insects disappeared for three to four months.

The Mockingbird is the only member of its family to have adapted readily to living in desert gardens, although unlike the Roadrunner it does not live in the actual desert. There is little special about the Mockingbird's habits, which are similar to those of other members of the family. Almost everyone knows of its singing ability, repeating the same phrase two to five times. It is also a well-known mimic but there were hardly any other birds in the area for it to mimic. The only sound that interfered with the male's melodic repertoire, and then only rarely was a fair imitation from far off of our Pekinese barking. The one special thing about the Mockingbird is that it continues to sing on and off all through the night especially when there is moonlight. Although in the desert there are sometimes wild and windy though rainless nights, many more are beautiful, warm, still and moonlit. On such evenings we often slept outside, finally nodding off as the loud, clear and unhurried song of the resident male Mockingbird echoed around the garden. The desert is silent during the day and was silent and romantic on stormy nights, as our bird was answered from all points of the compass by rivals. The only competing sound was the occasional far-off cry of a love-struck Coyote in the nearby hills.

In spite of the depredations mentioned earlier, the Mockingbirds succeeded in raising several young each season and kept the area liberally supplied with up-and-coming songsters. The bigger birds could not easily get into the Oleander and the juvenile Mockingbird was probably following its parents about when it was taken. Our other resident nesters - the Cactus Wrens - were our favourites. The largest wren and unlike the others in appearance, it is a handsome bird with its livery of black spots on a white and orange-tan breast. In spite of the sparsity of vegetation these shy birds managed to remain hidden most of the time and though we heard their hoarse, scolding calls daily, it took six months of coaxing before they popped out of the Bougainvillea to eat the kibbled dog food provided. Even if merely

watched they dived back into the spiny bush. In other deserts in which Saguaro Cactus grow the wrens often nest in them. However, our cactus remained nest-free lacking as it did the old nest holes of woodpeckers, which these wrens need to nest in.

In our garden, the Cactus Wrens nested only in the small palms. These had the frond bases left in place all the way down the trunks, giving them an attractive cross-hatched appearance and the wrens built where the cut fronds met the growing ones. The nest was a large, untidy mass of long, dry plant stems and large strap-like pieces of red-brown frond bud covers as well as a fair amount of plastic bag and some paper. However deep within this debris was a snug fibre-lined egg depository. After a wind storm the nests were often found on the ground though usually only when the nesting season was over and they had loosened. We rarely saw the wrens entering their nest as they were extremely shy and always moved around the tree out of sight and also because the nest was placed so that it was not easily observable from the ground. Because of this secretiveness the first we knew of the presence of chicks, during the first year, was when the parents appeared with one at the water dish. Later we found out why there was only one chick. It was because the pair never succeeded in raising more than two young per season, one per nest, due to the predation by the Roadrunners. The only other occasional loss was due to Ravens *Corvus corax*. These wary birds stuck to the tall palms when hunting. The Cactus Wrens, like all the birds in the garden, patronised the water dish all year round and frequently used it for bathing. Garden sprinklers and drip systems all around provided drinking water but rarely provided enough water for bathing in.

The common Ground Dove *Columbina passerina* (whose scientific name sounds like it comes from a Mexican children's rhyme) was a regular nester from the end of winter until the heat set in. These birds nested only in the tallest palms and far from being safe there they were in constant danger. In early spring all the garden birds froze on hearing a deadly sound save that was for the Roadrunners which remained alert and ready to take action. The sound was made by a pair of hunting Ravens as the two birds searched the crowns of the adjacent palms. Their cawing continued for two to three months during which time the Ravens took a heavy toll of chicks, mainly those of the doves, and flew straight to the distant cliff to feed this bounty to their brood. We watched them comb the palm fronds and estimated that one in four palms produced a victim during the breeding season. They lacked finesse and there was a lot of rough scrambling about accompanied by constant loud cawing as they communicated with each other. The Ground Dove was one of the very few birds seen in the inhospitable hills with small flocks of six to 12 moving around eating mainly prickly seeds from a species of cactus. Prior to local migration, the doves gathered in quite large numbers

on the wires outside the house.

The only other species to nest - and then only once - was the tiny tit-like Verdin *Auriparus flaviceps*. It hung its prickly little nest at the end of a willowy but thorny Palo Verde branch outside the wall at the back of the garden. So we saw little of the Verdins and their young. A later examination showed the nest to be globular with the entrance just below the top. It was closed-off with plant material and had a one-way action. It was amazing how the birds got in and even more amazing how they got out again. The nest was completely predator-proof and was very like the Common Waxbill *Estrilda astrild* nest in our garden in Durban (Gibson, 1996). The Verdins' nest had the same kind of one-way door, except that it was made of unapproachable cactus spines. Later, the yellow-headed Verdins were often seen flitting around the garden seeking insects. The only call they were heard to make was a quiet peep.

Assorted hummingbirds were non-nesting winter residents that sometimes stayed longer. These quarrelsome little creatures passed through in droves but only one at a time was resident, and divided its waking hours equally between drinking from the feeder by the back door and driving away other hummingbirds from the feeder. A male Costa's Hummingbird *Calyptes costae* always retired to the same perch on a nearby tree from which it could watch for intruders. To make nectar available to more migrating birds we hung another feeder by the front door. Within two days, the male had shifted to a position higher up in a farther-off tree, from which it could see the original feeder and also watch for hummers heading towards the one by the front door. However whenever it launched an attack, others took the opportunity to take a quick sip of nectar from the unguarded feeder. Many of our neighbours had hummingbird feeders, but a quick check usually found three-quarters of them were empty at any given time.

A Ladder-backed Woodpecker *Picoides scalaris* once spent two weeks in our garden. It drunk the 20% sugar solution from the hummingbird feeder as did a pair of yellow and black orioles *Icterus* spp. which stayed for two days. The woodpecker clung to the underside of a thick limb of a Palo Verde tree pecking at the place where live and dead wood met. It enlarged the hole until it could get its beak inside and extracted a small grub. This took it 17 minutes after which it rested on top of the limb for three minutes then returned to the underside for a further 20 minutes, apparently pecking at random without making any obvious attempt to stop and look or listen. It then flew off and took seven sips of nectar. Five minutes later it returned to the underside of the limb and pecked for 10 minutes before finding a small spider that was walking past. It had been clinging beneath the limb and pecking at it for 42 minutes out of 50. It fell from the underside once recovering after falling 46cm (1½ft) and then flying back to its original

position. The fact that it spent 50 minutes during which it captured just the small grub and spider must say quite a lot for the calorific content of the nectar, and the fitness of the woodpecker.

We sometimes got birds from the local rescue centre, one of which was a Loggerhead Shrike *Lanius ludovicianus* found with a broken wing on the north shore of the Salton Sea. It was one of four million wintering birds in the area. The shrike used its lethal bill to destroy bandage after bandage and its needle-point bill pierced assorted garden gloves, worn when handling it. It would eat only mealworms. Three weeks later its feathers still looked good, and though it had a permanently drooped wing, it could fly quite well and was released.

Another creature which came from the centre, was a very sick White Pelican *Pelicanus erythrorhynchos* found on the Salton Sea. This huge artificial expanse of water, formed from a breach in the Colorado River canal, is now 3.5% salt, 1.5% more than the sea, and is heavily polluted. In spite of this there are in it large numbers of African tilapia and these fish attract large flocks of both White and especially Brown Pelicans *P. occidentalis*. There are periodic heavy die-offs in these flocks, the cause or causes of which remain a mystery at least to government biologists. Our pelican, which was very thin and weighed about 3.5kg (8lbs) was so sick that it remained outside uncaged all day. It barely ate and died within four days. Its intestines were a foul mess, and even without the use of laboratory facilities, it was evident that it had liver flukes which could be seen slithering about.

Parrot ownership is high in the area and a fair number of escapees passed through our garden. These included a white cockatoo that stopped by to screech along with our voluble pet 'Sean Connery', which sat untethered on a perch outside all through the above events. The two cockatoos were still competing to find which could make the most din when the owner of the second cockatoo, who lived a block away, turned up. She was out looking for her bird, when she heard the two screeching.

The only other creatures seen in the garden apart from the aforementioned lizards, were the giant blue-black carpenter bee that drilled a 2cm ($\frac{3}{4}$ in) diameter tunnel in a dead Palo Verde limb and the interesting wind-scorpions, which pleased us by eating the big red fire ants. Also, we will never forget the termites that completely ate away all the beams of our bathroom ceiling.

Reference

Gibson, L. 1996. Birds in a Durban Garden. *Avicultural Magazine* 102,3:124-136.

BREEDING THE PAPUAN WREATHED HORNBILL *Aceros plicatus* AT PAIGNTON ZOO ENVIRONMENTAL PARK, ENGLAND

by Jo Gregson

The Papuan Wreathed Hornbill, otherwise named Blyth's Hornbill, is an irregular breeder in captivity. However, as we have begun to learn more about its avicultural requirements more successes have occurred. Asian hornbills can be quite a challenge: these species are intelligent and sensitive to change and take longer to form pairs; young males are vulnerable to bullying by older females; heated accommodation is necessary and a higher protein diet is needed for them to rear their chicks successfully. These and several other factors make them more difficult to maintain and breed compared to their African counterparts.

The pair of Papuan Wreathed Hornbills came to our collection on December 20th 2000. They are housed in an aviary which measures 3m x 5m x 4m high (approx. 9ft 9in x 16ft 4in x 13ft high), with an adjoining inside area measuring 2m x 3m x 4m high (approx. 6ft 6in x 9ft 9in x 13ft high). In the summertime the outside temperature ranges from 10°C-23°C (50°F-73°F), with the average being about 16°C (60°F). During the wintertime the birds are shut in the inside area that at night is heated to an average 15°C (59°F). In the summertime the inside temperature occasionally reaches 25 °C (77°F).

Two nest-boxes are provided. The one in which the pair bred measures 60cm x 70cm x 60.5cm high (approx. 2ft x 2ft 3in x 2ft 1½in high), with a 15cm x 15cm (6in x 6in) entrance hole 12.5cm (approx. 5in) from the bottom on the left-hand side of the 60cm (approx. 2ft) side. The box is 2.5m (approx. 8ft 2in) above the floor of the inside area. The other nest-box, which is in the outside aviary, measures 66cm x 40cm x 50cm high (approx. 2ft 2in x 1ft 3¾in x 1ft 7¾in high) and is 3m (approx. 9ft 9in) above the ground. The entrance hole measures 20cm x 20cm (approx. 8in x 8in) and is at the centre of the narrow end where there is a small landing ledge. This is the same type of box used by our Wrinkled *A. corrugatus*, Trumpeter *Bycanistes* or *Ceratogymna bucinator* and Northern Ground Hornbills *Bucorvus abyssinicus*.

The diet consists of a varied fruit mix, along with mealworms, mice, cooked minced (ground) beef and boiled egg. SA37 is sprinkled onto the food. When the chicks were due to hatch pinkies were added to the diet, then after eight days, 'small fluffs', and by day 25 'large fluffs' and small adult mice were offered.

The pair did not seal the nest-box entrance. The female was often seen

out of the box and the male was sometimes seen in the box with the female and chicks. The first chick left the nest-box at 100 days and spent a few days of the floor before mastering the art of jumping from perch to perch. Once one chick has fledged it is important to watch for any others remaining in the nest, and this was the case with our birds. Three days after the first chick fledged the female began spending less time in the nest-box and, on inspection, the second chick, still quite heavy in blood quills, was found to be very soiled. As it probably had some time to go before fledging, we decided to clean it and then placed it in an open-fronted box of the floor of the aviary, where it remained for several days and was fed by both parents.

As the first chick to fledge was also soiled and spent some time on the floor of the aviary, I think that it fledged too soon and may have left the box at 100 days because the inside of the box was dirty. The chicks would have been better prepared at 115 days.

Once both were fully feathered, on fine days they were lightly sprayed with water to help improve the condition of their plumage. Asian hornbills have a large and very active preen gland and when these birds are handled they are found to be greasy and have a distinctive smell. The red, yellow and orange bill colours of some of these species are obtained from the oils of this gland. As these birds spend much of the day preening and oiling their feathers, our chicks soon had waterproof plumage. Both chicks when they fledged had male-type plumage. However, at four months of age, the head of one of them began to sprout black feathers and this proved to be a female. The beak of the other bird, a male, had by then grown longer than that of the adult female. The two were separated from their parents at five months of age, by which time the female seemed to have tired of their company.

As described above, the Papuan Wreathed Hornbill *Aceros plicatus*, also called Blyths Hornbill, has been bred at Paignton Zoo Environmental Park. This is probably the first successful breeding of this species in Great Britain or Ireland. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

I know that this species has nested at Cricket St Thomas and Linton Zoo, but so far as I am aware, in neither collection were the chicks reared successfully. Hornbills in Zoos - a Review by Dr Harro Strehlow published in International Zoo News Vol. 48/2 (March 2001), reviews the breeding of hornbills in collections throughout the world and is recommended reading for those interested in these species. At El Retiro Park, Malaga, the young Papuan Wreathed Hornbill left the nest cavity after 126 days - Ed.

DO VITAMINS A AND E HAVE AN IMPACT ON THE FERTILITY OF HUMBOLDT PENGUINS *Spheniscus humboldti*?

by Kelly Rose and Caitlyn Hopkins

Aims of study

To investigate the impact on fertility from adding supplementary vitamins A (retinol) and E (α -tocopherol) to the diet of captive Humboldt Penguins.

To improve the number of viable chicks produced each year.

Introduction

Humboldt Penguin in the wild

The Humboldt Penguin *Spheniscus humboldti* is native to the coastlines of Peru and Chile in South America. The birds spend time at their colonies nesting, rearing their chicks and moulting, but otherwise are thought to spend most of the year at sea. The species is listed as CITES 1, due mostly to extensive guano mining in the nineteenth and twentieth centuries, for use as a commercial fertiliser. The continuous disturbance of the birds at their nesting grounds in the course of its collection reduced the population size considerably (del Hoyo et al. 1993). Other problems such as intensive egg collection, indiscriminate fishing and oil spills (Frost et al. 1976) have also contributed to the reduction in numbers. The current population is unknown, however, following El Nino the population is known to have decreased to below 65% of its former number (Hays, 1984).

In captivity

The captive population of the Humboldt Penguin is decreasing (Blay, 1995) and therefore many zoos are carrying out research to find out why this is and what, if anything, can be done about it. In most zoos they are fed frozen fish, and due to the limitations of this diet, considerable attention has been given to their feeding as a possible variable/experimental factor (Wallace et al. 1992). In the wild their diet consists mostly of anchovies and anchoveta (Blay, 1998) which together with the availability of other fish may mean that vitamin levels are higher in wild birds. This coupled with the fact that vitamins A and E have important roles in reproduction were among the major factors when deciding on this study.

At BirdWorld

BirdWorld has kept Humboldt Penguins since 1983. During this time, data have been recorded on breeding patterns, matings and the number of

fertile eggs and chicks produced. It has a very successful history of breeding this species and has produced well over 300 birds. The average production rate has varied each year, and any decrease in numbers may be due to many reasons including ageing birds and changing weather patterns. Nonetheless, it was decided that a research project was in order to determine whether changing their food could increase the production of penguin chicks.

Methods

Study site

The study was carried out at BirdWorld, Holt Pound, Farnham, Surrey GU10 4LD, UK. The captive colony is housed in an open display enclosure, with a freshwater pool, rocky area and off-show nest-boxes. It comprises 14 adult Humboldt Penguins in seven pairs and various offspring bred there last year and all hand-reared at BirdWorld. The adult birds' ages range from 13 to 20 years old (the exact hatching dates are to be found in Appendix 1). Humboldt Penguins are thought to reach sexual maturity at two years of age but their optimal breeding age is unknown. Because of the small size of the population, it was decided to use all birds in the experiment rather than have a control group.

Diet

The birds are fed on a diet of frozen Sprats *Sprattus sprattus* kept at an average temperature of -20°C (-4°F), then defrosted in cold water overnight and/or running water. The Sprats were analysed for vitamin A and E content, during the course of this experiment. Vita-Zu tablets are added to replenish any vitamins lost through the freezing process. Many zoos keep fish frozen for periods of over six months, and prolonged storage can cause depletion in vitamin E (Gailey-Phillips et al. 1982). Salt tablets are also added to their diet, to compensate for the salt they would normally acquire from the seawater. The tablets are fed in about 30 fish (one Vita-Zu and one Salt tablet per Sprat) every two days. The number of these fish that each individual penguin receives is random and would vary each time. It is difficult to be any more precise without causing undue stress to each bird. Vita-Zu tablets contain 1650 IU vitamin A and 25 IU vitamin E per tablet.

Sprat analysis

Frank Greenslades supplies the sprats; deliveries are normally annual in October/November. Once the fish are caught they are put on ice and frozen within 12 hours and upon delivery, BirdWorld store the fish in a freezer and defrosts the appropriate quantity overnight for the next day's consumption. They were tested by dry weight analysis for vitamins A and E by Medlab (MacDonald Exotic & Domestic Laboratories).

Blood samples

Initial tests

On January 10th 2001 during routine veterinary health checks all the adult penguins had 2ml of blood taken from the carotid artery and some of this was used to analyse for the levels of vitamin A and vitamin E. As much as possible was done to minimise the stress to the penguins during this procedure. The penguins were sectioned off from the pool at 8.00am, when most of them are in their nest-boxes anyway. They had not eaten since 3.30pm the day before.

Re-testing blood

As blood sampling is a stressful procedure, it was decided not to repeat the analysis after supplementation of vitamins A and E. Instead a comparison of reproductive performance with previous years was used to assess the benefit of additional supplementation.

Supplementation

This consisted of injecting 1000 IU (0.02ml) liquid vitamin A (Vitamin A Palmitate Ampoules - Cambridge Selfcare Diagnostics Limited) into a Sprat, then adding 25 IU ($\frac{1}{4}$ tablet) vitamin E (Tocovite 100 tablets - Arnolds Veterinary Products Ltd.) in tablet form. Each bird was hand fed one fish each per day for a period of five days. If any bird did not voluntarily eat the fish, they were not force fed, as it was felt this would be detrimental to the project and increase stress levels in the birds. The penguins' supplementation was given regularly through the breeding season daily for five days then discontinued for nine days. The usual dietary supplementation was continued as usual.

Results

Behaviour affecting dosage time

During the early hours of the day (8.00am - 9.30am) the penguins are all in their nest-boxes and not interested in food. At 11.30am, the penguins receive their first feed of the day, and there is usually minimal interest, likewise after 4.00pm when the birds are winding down. However the 3.30pm penguin feed finds most or all the birds in the water and very hungry. Therefore after some basic experimentation it was found that the best time of day to feed the supplemented fish was around 2.30pm - 3.00pm so as to ensure the penguins were hungry enough to eat their tablets/fish. It is worth noting however that this is not always the case at other times of year, for example, during moulting most adults have little appetite at all (Williams et al. 1989).

Sprat testing

The vitamin content of the Sprats compared to other fish (dry matter comparisons) commonly used to feed captive penguins (Crissey et al. 1998) is detailed below. The Columbia River Smelt contains significantly higher levels of both vitamins with Trout also high, whereas all other fish appear to be on a par with each other.

Figure 1. Comparison of various fish and their vitamin contents. Sprat analysis obtained from BirdWorld sprats and the data of Capelin, Herring, Trout and CR Smelt having been taken from Crissey et al. 1998.

Fish	Vitamin A (IU g ⁻¹)	Vitamin E (IU kg ⁻¹)
Capelin	18.2	18
Herring	6.2	5.8
Trout	10.9	70.2
CR Smelt	232	142
Sprat	12.3	2.7

Figure 2. This year (2001) has had a marginal improvement on last year but still does not compare favourably with previous years.

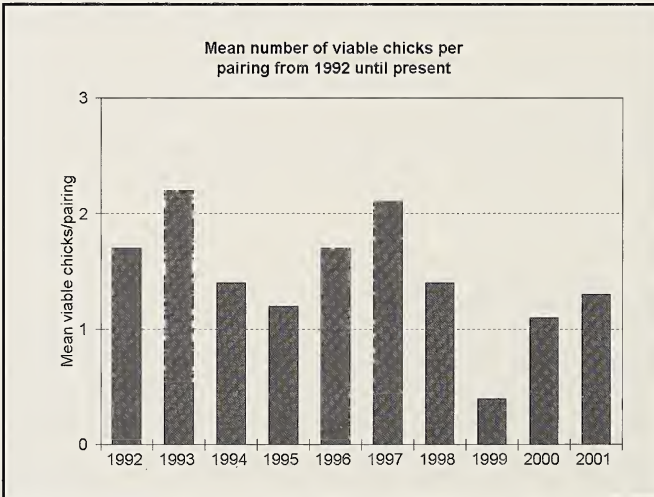
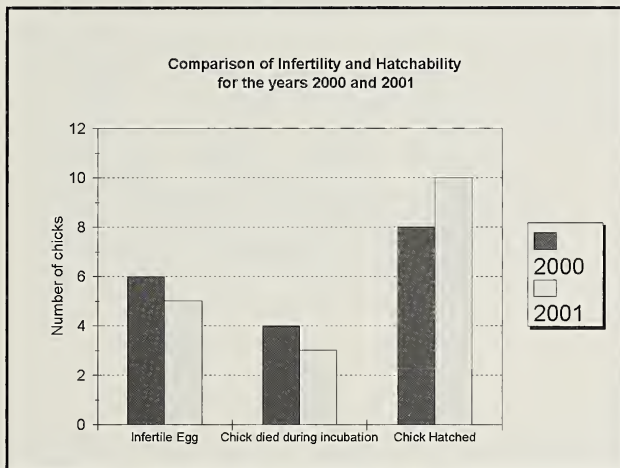


Figure 2 shows the mean number of viable chicks produced per pairing from 1992 to present (2001). In general, the number produced in 1999 reached a low and since then has improved again. This year there were two clutches, in the first 11 eggs were laid but three were infertile. Two of those three came from one pair in which the male, 566, is thought to be infertile as he has only successfully sired offspring once, in 1992. Unfortunately his

current partner, female 718, was a successful breeder with another male up until 1998 when he died. Due to the lack of 'spare' males she paired with the infertile male and has not had any offspring since and this may have adversely affected the mean viable chicks per pairing.

Figure 3. A comparison of mortality of eggs and chicks compared to last year shows visible improvement.



In the second clutch, seven eggs were laid, two were dead in the egg and two were infertile. Of the three penguins which hatched out of the second clutch, one died due to an incubator failing.

Figure 4. Vitamin A levels found in each penguin prior to each supplementation.

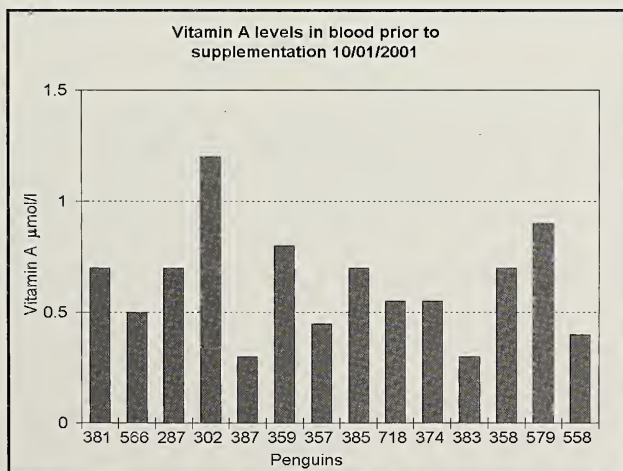
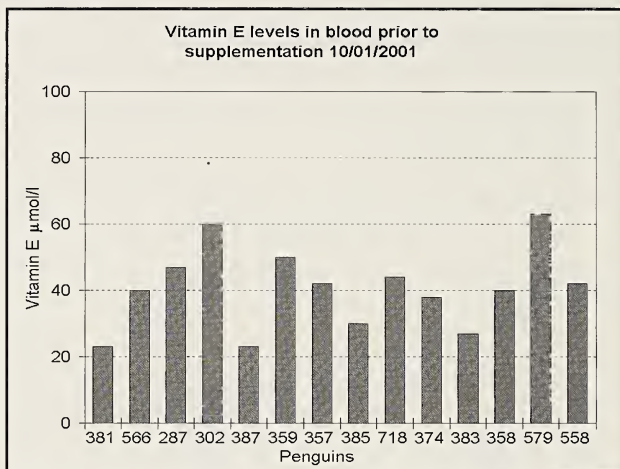


Figure 5. Vitamin E levels found in each penguin prior to supplementation.



Discussion

Copulation

Over the course of supplementation, it was noted by a number of keepers that the penguins were observed to be copulating more than previous years. We believe that, visually speaking, the change in diet increased copulation (Jenkins & Banks, 2001), therefore improving the chances of reproductive success.

Observations were made during general keeping duties. These duties include feeding twice a day, cleaning the pond and checking nest-boxes. Such duties are performed on a regular basis each year and offer a consistent amount of observation time.

Normal levels of Vitamins A and E

The nutrient requirements of penguins are unknown especially for this species as little study has been done in the past. Therefore, estimation of requirements have been extrapolated in part from knowledge of the nutritional requirements of domestic birds (Ellis & Branch, 1994). Published vitamin A requirements are between 1.5 and 4.0 IU g⁻¹ dry diet (NRC, 1994). Excess dietary vitamin A has been demonstrated to have toxic effects in most species studied, however, chronic vitamin A toxicity typically results from prolonged exposure to intakes of 100-1,000 times the nutritional requirement (NRC, 1987) and in formulating the supplementation we were conscious that high dietary concentrations of vitamin A has also been shown to depress vitamin E status in birds (Sklan & Donoghue, 1982).

Another possible problem in apparent fluctuating fertility levels may be that the size of the population can also affect breeding. In captivity it is recommended that Humboldt Penguins be kept in groups of at least six but ideally 15-20 birds (Schmidt, 1978). This is because six birds are the minimum number required for eggs to be laid. At BirdWorld, although the number of adults (14) remained constant throughout the experiment, this year, the number of juveniles fluctuated from eight to two.

Factors affecting the project

1) Problems administering one vitamin modified fish per bird

This was appetite dependable as much as anything else. There were some days when some penguins did not eat anything and some when the penguins would fight over a fish and tear it in half.

2) Inconsistency in the amount of vitamin E due to cutting technique

A knife was used to score then halve the tablets but invariably some would disintegrate and uneven dosages would affect the experiment.

3) External factors affecting mating, e.g. weather, fish quality, water temperature, public interaction, keeper interaction

This is almost unquantifiable.

4) Interference with nest-boxes and birds sitting on eggs

If a bird was in the nest-box when supplementation was due, the lid would be lifted and several non-evasive attempts would be made to feed the bird the fish. If this failed, the fish was left in the nest-box in the hope that it would be eaten later.

5) Interference of last years' offspring interacting with adult pairs

There are ten nest-boxes and seven adult pairs, usually each pair sticks to a particular box, and therefore three are empty. However the juveniles would often walk into occupied nest-boxes resulting in an aggressive reaction from the adults.

6) Bird behavioural changes caused by keeping duties, e.g. cleaning penguin pond

The pond is cleaned weekly and all penguins are kept out of the pool for approximately 90 minutes. Most of the adults leave voluntarily but this is not always true of the juveniles, and their presence in close proximity to the nest-boxes increases the likelihood of (5) occurring.

7) Our own regular salt and vitamin tablets

As detailed previously under diet, it is possible that these regular tablets could mask the results shown in the blood tests.

Conclusion

One of the main reasons for undertaking penguin research at BirdWorld was to make a positive impact on the birds, but also to offer recommendations for other zoos. With this in mind, we suggest that it is essential for zoos to supplement penguins' fish with vitamin tablets. This supplementation needs to be vigilant so as to get the best results. Another suggestion may be to monitor the use of frozen fish and to develop a system (if not already in place) to limit prolonged frozen storage. Undertaking blood sampling of the penguins is also a major operation worth mentioning. We found that such a procedure should be limited to a minimum and planning and practice is required prior to the commencement of the study.

Future experiments could include re-sampling the blood post supplementation and looking at hormone levels in the blood as a measure of fertility and/or adding zinc as a soluble salt to aid vitamin E uptake. Originally the project was going to be altering photoperiod, but this proved too difficult at BirdWorld. Another project, which was discussed in the early stages, was cloacal sampling of post-copulated females to examine sperm activity. This would have been costly in terms of observation time required and also would have been an evasive procedure, requiring a license from the Home Office. This has been performed previously on wild Adelié Penguins *Pygoscelis adeliae* (Hunter, 1996).

It has been suggested that vitamin A and E deficiencies may result in reduced fertility, reduced egg hatchability, birth defects, high chick mortality and suppressed immune systems (Crissey, McGill and Simeone, 1998). We believe that vitamin A and E supplementation was successful in our case as the penguins were observed to be copulating more, the number of viable chicks produced increased compared to the previous two years and there was a reduction in mortality rate.

Fertility research performed on Humboldt Penguins has a limited history. For this reason, we believe that to obtain more valid results, it is necessary to continue the project over a number of breeding seasons, and encourage other zoos to try similar studies.

Acknowledgements

Above all we would like to thank Jason Waine B.Vet. Med. MRCVS for his continued assistance and time throughout the project. Also Edward Partridge B.Sc for reading related work, original drafts and comments. We would like to thank the BirdWorld education and keeping staff for assistance, ideas and encouragement and Dr Peter Hopkins for original ideas and guidance. Gratitude also goes to Kerry Banks, BirdWorld's Head Keeper, for her exceptionally well kept penguin history files! Last, but not least, the generous public, members, family and friends who donated money for the costs of this project and without whom it would not have been possible.

References

- Crissey, S. et al. 1998. Influence of dietary vitamins A and E on serum α - and γ -tocopherols, retinol, retinyl palmitate and carotenoid concentrations in Humboldt penguins. *Com. Bio Phy. Part A* 121:333-339.
- del Hoyo, J., Elliot, A. and Sargatal, J. (eds.). 1993. *Handbook of the Birds of the World*. Vol 1. Lynx Edicions. Barcelona.
- Ellis, S., Branch, S. (eds.). 1994. *Penguin Husbandry Manual*. American Zoo and Aquarium Association, Bethesda, MD.
- Gailey-Phillips, J. and Sladden, W. 1982. Survey on Nutrition of Penguins. *J Am Vet Med Assoc.* 181:1305-9.
- Hunter, F.M., Davis, L.S. and Miller, G.D. 1996. Sperm transfer in the Adelié penguin. *The Condor* 98:410-413.
- Jenkins, R. and Banks, K. 2001. *Personal communication*. BirdWorld.
- National Research Council. 1987. *Vitamin tolerance of animals*. National Academy of Sciences, Washington, DC.
- National Research Council. 1994. *Nutrient Requirements of Poultry*. National Academy of Sciences, Washington, DC.
- Schmidt, C.R. 1978. Humboldt penguins at Zurich Zoo. *Int. Zoo Yb.* 26:47-52.
- Sklan, D. and Donoghue, S. 1982. Vitamin E response to high dietary vitamin A in the chick. *J Nutr* 112:759-765.
- Wallace, R. et al. 1992. The effect of dietary vitamin A (retinol) and vitamin E (alphatocopherol) on serum status of Humboldt penguins. *SPN* 5:1:14-20.
- Williams, G. et al. 1989. Plasma α -tocopherol, total lipids and total cholesterol in wild rockhopper, magellanic and gentoo penguins before and after moulting. *The Veterinary Record*, June 3: 585-586.

Appendix 1

Hatch Dates

Males		Females	
287	13/04/81	358	20/03/83
302	03/12/81	374	30/04/83
357	09/03/83	383	31/05/83
359	22/03/83	385	28/06/83
381	30/05/83	558	15/03/88
387	01/07/83	579	14/04/87
566	07/04/87	718	12/12/88

Appendix 2

Current pairs

Male	381	566	287	302	387	359	357
Female	385	718	374	383	358	579	558

Appendix 3

Pairings and viable offspring 1992 - 2001

1992			1993			1994		
Male	Female	V.O.	Male	Female	V.O.	Male	Female	V.O.
354	U	1	287	374	3	287	374	2
302	358	2	357	U	4	302	358	1
359	351	2	357	351	2	357	719	1
387	383	4	381	385	3	359	579	1
357	U	5	387	383	6	381	385	1
401	579	4	401	579	1	593	718	4
566	558	1	593	718	2	596	610	1
287	374	1	U	718	4	U	719	2
			U	U	1	U	U	2
1995			1996			1997		
287	374	1	302	383	3	287	374	3
302	383	2	357	719	1	302	383	3
357	719	1	259	579	1	359	579	1
359	579	1	381	623	1	357	623	1
381	385	1	387	358	3	381	385	3
387	358	1	593	718	4	387	358	2
593	718	1	U	385	2	593	718	4
596	623	3						
U	U	1						
1998			1999			2001		
287	374	1	302	383	3	302	383	3
302	383	2	2000			357	558	2
357	558	4	287	374	2	381	385	2
359	579	2	302	383	2	359	579	1
381	385	1	357	558	1	287	374	1
387	358	1	381	385	3			

Kelly Rose BSc is now doing a PGCE course at Southampton University and hopes to become a secondary school teacher. Until June 2002 she can be contacted by e-mail: kjr201@soton.ac.uk

Caitlyn Hopkins B. App. Sci. H.M.S. Ed has returned to Australia.

COUNCIL MEETING

A council meeting was held on Sunday, October 14th at Chestnut Lodge, Cobham, Surrey.

The following members were present: Miss R. Ezra (President), K. Dolton, Prof. J. R. Hodges, C. J. S. Marler, R. C. J. Sawyer (Vice Presidents), M. Curzon, M. Ellis (Hon. Editor), Mrs L. Gardner, R. H. Grantham, N. Hewston, R. E. Oxley, S. Pyper, P. Schofield, J. Trollope, Ms R. Wiseman. L. Gardiner joined the meeting following his election as the new Hon. Secretary/Treasurer. C. J. S. Marler took the chair and was later elected Chairman.

At the start of the meeting a minutes silence was observed in memory of our late Chairman Ken Lawrence. Apologies for absence were received from Mrs D. Holloway and Dr R. Wilkinson, after which the minutes of the previous meeting were approved and were signed by the Chairman.

Miss R. Ezra, Prof. J. R. Hodges, C.J.S. Marler, Dr H. Quinque, R.C.J. Sawyer, M. Ellis, M. Curzon and S. Pyper were each re-elected for a further five-year term. It was agreed to invite J.A.Ellis to join the council, an invitation which we are pleased to say he has accepted.

The Hon. Editor gave a brief and concise report. The valuable assistance from Mrs June Sherborne was noted and the Hon. Editor was thanked for his efforts.

After much discussion, it was decided that the D. H. S. Risdon Award for the best article in the magazine during 2000, should go to Susan Congdon and Bill Zima for their account of the breeding of the African Jaçana *Actophilornis africanus* at Disney's Animal Kingdom (*Avicultural Magazine* Vol. 106, No. 2, pp. 62-73).

In 2000, Ken Ashken generously gave the society a sum of money to create the Dulcie Cooke Award in memory of his late mother. The council decided that this award, an engraved plaque, should be given annually for what in the council's opinion is the best photo submitted to illustrate an article in the magazine. Again there was much discussion, with the majority of members voting in favour of the award for 2000 going to Theo Pagel for his photos showing the nest, egg, nestling and newly fledged Elegant Pitta *Pitta elegans* at Cologne Zoo (*Avicultural Magazine* Vol.106, No. 4, pp.166-167). It noted that the nestling of this species appeared to be undescribed prior to the publication of his photo.

Five potential first breedings in Great Britain or Ireland were considered and all approved. The society's medal was awarded to: I. Hinze for the Mali or Kulikoro Firefinch *Lagonosticta virata*; R. H. Grantham for the Purple-bellied Parrot *Triclaria malachitacea*; R. C. J. Sawyer for the Blue-bellied Roller *Coracias cyanogaster*. The society's Certificate of Merit was awarded

to: Hillside Bird Oasis for the Lesser Flamingo *Phoeniconaias minor*; Blackbrook Zoological Park for the Marabou *Leptoptilos crumeniferus*.

We hope to arrange a visit to the Cotswold Wildlife Park on Saturday, March 23rd 2002, with the President's Garden Party taking place Sunday, July 15th, and have been invited to visit Ken Dolton's collection near Worcester on Saturday, August 31st.

After a splendid lunch provided by our hosts, Miss Ruth Ezra and Raymond Sawyer, the meeting continued into the afternoon. Among the matters discussed were deciding upon a new delegate to attend NCA (National Council for Aviculture) meetings and storing the large number of back issues of the magazine. Lee Gardiner, the newly elected Hon. Secretary/Treasurer, said he would attend the NCA Annual General Meeting and Laura Gardner offered to store some of the back issues at Leeds Castle. We can though no longer store the number we have in the past, and will have to dispose of some of them. So, if there are back issues you want, now is a good time to buy them.

The society remains in a sound financial position, thanks largely to the lower cost of present day printing, generous donations from Vice President Dr H. Quinke and others and the great generosity of our President, Miss Ruth Ezra, who each year donates to the society's funds the money raised by her much looked forward to and greatly enjoyed garden party. Nor should we forget how Geoffrey Greed and Bristol Zoo stepped in and helped save the society and get in onto its present sound financial footing following the death of Harry Horswell. In recognition of this, Geoffrey Greed and Mrs June Sherborne (who is to continue to do secretarial work for the society) have been made Hon. Life Members. Following our departure from Bristol Zoo Gardens, we now have the society's minute books dating back to 1904, and these may provide interesting material for future issues of the magazine.

Improving how the society promotes itself and aviculture, and whether it should have a mission statement were discussed. Also considered was whether or not the society should help fund conservation and research projects, and it was agreed that the Hon. Editor should ask members and groups seeking such funding to submit written proposals for consideration at future meetings.

The Chairman concluded the meeting by thanking Miss Ruth Ezra and Raymond Sawyer for their kind hospitality.

If you have any views about the above and how the society conducts its business, how it might enrol more new members, the content of the magazine or how the website might be improved, we will be pleased to learn your views.

LETTERS TO THE EDITOR

Dave Coles' Additions and Corrections to UK First Breeding Records (Vol. 107, No.3, pp. 125-135) are a very useful addition to avicultural literature. May I make a few comments? The common name of *Eos squamata obiensis* is the Obi Lory, not Wallace's Lorikeet. A record of the breeding of the so-called Intermediate Parrakeet apparently appeared in the Foreign Bird Federation's *Breeding Register* for 1994. It is now generally accepted (after the publication of several papers), that the Intermediate Parrakeet is a hybrid between the Slaty-headed Parrakeet *Psittacula himalayana* and the Plumhead *P. cyanocephala*. Finally, the common and scientific name Caninde Macaw *Ara caninde* are invalid. The correct names are Blue-throated Macaw *Ara glaucogularis*. I am not being critical - just trying to avoid the continued (and often confusing) use of incorrect names.

Rosemary Low

FROM THE WEBSITE

Leonard Enos asks: 'Does anyone have any information concerning the Crested Jay *Platylophus galericulatus* in aviculture? I find it hard to believe that no one has kept this intelligent, personable and fearless corvid outside my local zoo (San Diego).'

According to the *Zoological Society of San Diego 2000 Physical Inventory*, San Diego Zoo began the year 2000 with five pairs of *Platylophus g. galericulatus*. During the year three young were hatched but failed to survive, and at the end of the year the zoo had four pairs on exhibition.

Cologne Zoo (Germany) listed this species in 2000 and Vogelpark Walsrode (Germany) had three in its collection on December 31st 2000. I have no information for 2001.

Roland Cristo asks 'Has the Yellow-breasted Cissa *Cissa hypoleuca* been bred in England or Europe?' I know it has not been bred in Britain, but am not sure about in the rest of Europe, does anyone else know?

Daniel Shearing points out that three Yellow-breasted Cissas were sent to M. Delacour's collection at Clères in 1927 where the birds carried sticks but never attempted to nest. Later that year they were given to Alfred Ezra and nested on several occasions but always produced infertile eggs. The eggs were similar in size to those of the Blackbird *Turdus merula* and coloured white with brown speckling.

The watercolour painting of these birds by Roland Green, like the birds themselves, has faded in colour over the years. Hence, the scientific name *hypoleuca*, which refers to the white breast of the original museum specimens.

BOOK REVIEWS

NEW GUIDE TO PIGEONS AND DOVES

Of my three favourite bird families, the pheasants, waterfowl and pigeons, Jean Delacour's monographs (Country Life, 1951 & 1954) have long provided completely satisfactory reference works for the first two groups. Derek Goodwin's *Pigeons and Doves of the World* (British Museum, 1967) is of at least equal quality, but has only three colour plates, illustrating diversity within the family, sexual dimorphism, and some comparisons of juvenile birds with the adults. Excellent line drawings of many species within the text give an idea of shape and markings, but have limited use for identification purposes. This left a vacant niche for a book whose colour plates could serve the same function for pigeons as do Peter Scott's for waterfowl and J.C. Harrison's for pheasants.

Now, at last, such a book - *Pigeons and Doves - A Guide to the Pigeons and Doves of the World*, published by Pica Press has arrived, and in a form that complements, rather than supercedes, Goodwin's book. David Gibbs and Eustace Barnes wrote the text, and John Cox and Barnes painted the illustrations. I can identify the work of these co-illustrators only by the signature at the bottom of the page, so uniform are their styles and the quality of their work. Certainly for the species I am familiar with, not only are the shapes, colours and markings technically accurate, but the painters have captured the 'jizz' of each bird so that it looks like a living breathing dove. There is a sense of movement, either arrested or imminent, aesthetically very satisfying. The colour printing is overall a little on the dark side. The wing marking of the Crested Bronzewing, for example, appears a deeper purple than I have ever seen it in life.

Cox or Barnes might have attempted to paint one of the extinct Raphids, the Dodo or two solitaires. There should be sufficient contemporary illustrations of the few living Dodos brought to Europe for this to be possible. However, it is nice to see their family (Raphidae) given the same treatment in the text as that afforded to the Columbidae, the surviving family of the order Columbiformes. The Dodo tends to be regarded as some kind of icon of extinction, having lost its identity as a bird worthy of individual attention. Almost all 319 pigeon species (except for a very few probably extinct species) are shown in full colour, as are subspecific and immature plumages. Relatively few of these species are common in aviculture, and the variety of colour and form comes as a revelation. It is not so much the range from the Diamond Dove to the crowned pigeons, as that there are, for example, 36 species of imperial pigeons when one is used to seeing mainly the Pied and Green, and there are 17 New World quail doves when one is familiar only

with the Mountain Witch, or Crested, as it is called here.

In terms of taxonomic classification, the authors cannot be accused of being 'splitters' on the one hand or 'lumpers' on the other. What have traditionally been regarded as three subspecies of the Zebra Dove emerge here as three distinct species. However, the monotypic genus *Aplopelia* is absorbed into the genus *Columba* with the typical pigeons. More controversially, the Madagascar Turtle-Dove is also placed in this genus, while to one who has kept and bred it, it seems very much a *Streptopelia*, if a slightly 'different' one. Common names are more open to personal preference than scientific ones. Thus, the authors rename two of the crowned pigeons - the Blue becomes the Western and Scheepmaker's the Southern. At first sight I thought the Brush Bronzewing was now the 'Bush' Bronzewing, but that is just a misprint on the plate, as the text refers to this bird by its more customary designation.

Approximately a quarter of the book is taken up by the colour plates, the rest being devoted to the individual treatment of each species, interspersed with notes on the characteristics of each genus. The comprehensive coverage of each species comprises: Identification, Voice, Habits, Habitat, Status and Distribution, Description, Measurements, Geographic Variations and (particularly useful) References. Alternative names and classification are also given.

There is little reference to aviculture, except in so far as trade in live birds is recognised as posing less threat to this group than to parrots. This reflects the, regrettable perhaps, fact that few field ornithologists are also aviculturists. However, to have attempted to include avicultural notes as in Delacour's treatment of pheasants and waterfowl would have considerably increased the size of the book. It is pointed out that roughly a third of pigeon species are in some danger of extinction, making this one of the most threatened bird families. The authors express the hope that '... this work will make a small contribution towards highlighting the plight of some of our most beautiful and relatively neglected birds.' In this they have succeeded admirably.

None of the points I have made constitute adverse criticism. Negative comment of this attractive and useful book would be difficult to justify. As well as being invaluable for identification, the notes on diet and behaviour provide points of reference for anyone who keeps doves. It should be on the shelf (or better still open in the hands) of every aviculturist, field ornithologist, commercial importer and anyone else with an interest in these birds.

Pigeons and Doves - A Guide to the Pigeons and Doves of the World is published by Pica Press, The Banks, Mountfield, Nr. Robertsbridge, East Sussex TN32 5JY, UK. It is priced £38.

Philip Schofield

BIRDS OF EAST AFRICA

The new *Field Guide to the Birds of East Africa* has been a long time coming, I can remember talking and corresponding about it with Terry Stevenson, co-author with John Fanshawe, as long ago as 1987 or thereabouts. More recently I attended an illustrated talk at the County Museum, Truro, here in Cornwall, given by John Gale who, along with Brian Small and Norman Arlott, painted the illustrations. I admired his tremendous enthusiasm and marvelled at the fact that he had travelled so widely in East Africa observing, videoing, photographing and sketching so many of the species for the plates and knowing what publishers pay for them, wondered how with all this meticulous preparation he managed to make a living from it! He then revealed that he is also a veterinary surgeon and between painting birds works as a locum in Devon.

Conscious no doubt of the fact that there are already a number of bird books covering East Africa, the publishers or authors, looking I guess for a way to set their guide apart from the others, cover not only Kenya, Tanzania and Uganda, but also the birds of Rwanda and Burundi. Following the dozen (12) or so introductory pages and plate showing seven recently recorded species (two others were recorded too late for inclusion) are 286 plates illustrating 1,388 species, or as stated on the back cover: '3,400 images illustrating all plumages and major races likely to be encountered.' This we are told amounts to 80% of the species recorded in sub-Saharan Africa. On the page opposite each plate is the text about each species illustrated on that plate and a distribution map for each species, with its range shown in red. The text about each species usually amounts to some nine to 12 lines, sometimes more sometimes less, covering recognition, habitat and voice.

The plates are in the main outstanding and of an almost uniformly high standard. I especially like those painted by John Gale. Therefore, it may perhaps be over critical to say that I was struck by the fact that a number of perching birds, including some painted by him, are shown seemingly standing on the ground, which to the unknowing could be misleading; while some of those painted by Brian Small are shown standing curiously with one foot on the ground and the other gripping a branch! One of these is the Black-headed Gonolek (pI. 234), which is a shame as its coloration is to me more accurate than that of the same species portrayed in *Birds of Africa* and is marginally better than that in *Birds of Kenya and Northern Tanzania*. The latter though has more accurately coloured illustrations of the Red-headed Bluebill, Java Sparrow (introduced onto the islands of Zanzibar and Pemba) and Black-and-white Mannikin which in western Kenya, or at least on the Cherengani Hills, has a brownish, not jet black mantle. Interestingly, Stevenson and Fanshawe describe the Java Sparrow as locally common on

Zanzibar and Pemba, whereas the authors of *Birds of Kenya and Northern Tanzania* refer to small numbers on Pemba and make no mention of its status on Zanzibar. I wonder which of them is correct?

It is difficult not to make comparisons between this and the other two titles mentioned above. However, one covers just Kenya and northern Tanzania, while the other will eventually consist of seven huge volumes, the full set costing several hundred pounds (or dollars). *Field Guide to the Birds of East Africa - Kenya Tanzania Uganda Rwanda Burundi*, on the other hand, costs £29.95 (in the UK) and is an out-and-out field guide, albeit a fairly thick one (just over 600 pages), that has illustrations and descriptions of the 1,388 species found in this large area of Africa, as well as other parts of the continent. Male, female, immature and other plumages, including those of the main subspecies are illustrated and described where appropriate.

Published by T. & A.D. Poyser Ltd., Harcourt Place, 32 Jamestown Road, London NW1 7BY, UK (website: www.academicpress.com), it will surely become one of the popular standard guides for those wishing to identify African birds.

Malcolm Ellis

PERUVIAN BIRDS

The Ecotravellers' Wildlife Guide: Perú by David L. Pearson and Les Beletsky is similar in style/format to the earlier guides in this series, most of which have been reviewed in the *Avicultural Magazine*. Therefore, rather than risk duplicating what has been written previously, I propose to concentrate on the bird section of this present guide, which is after all what is likely to be of greatest interest to members.

Plates 20-80, painted by David Beadle, Daniel Lane, David Nurney, John O'Neil and John Sill, illustrate a wide range of species, beginning with seabirds, among them the Humboldt Penguin and including other waterbirds, birds of prey, pigeons and doves, parrots (13 species), hummingbirds (20 species), barbets, toucans and aracarís, manakins, tanagers (25 species) and small seed-eaters. Although intended primarily for tourists and ecotravellers, this guide could be useful to aviculturists wishing to identify birds from this part of South America. In addition, it has excellent illustrations of a wide range of mammals, amphibians, snakes and other creatures.

The Ecotravellers' Wildlife Guide: Perú by David L. Pearson and Les Beletsky is published by Academic Press, Harcourt Place, 32 Jamestown Road, London NW1 7BY, UK and 525 B Street, Suite 1900, San Diego, California 92101-4495, USA (website: www.academicpress.com). It is priced £19. 95 in the UK, US\$29.95 in the USA and \$44. 25 in Canada.

Malcolm Ellis

NEWS & VIEWS

UK BREEDINGS

The Oasis Hummingbird *Rhodopis vesper* has been bred by Bob McWha, who lives in Merseyside, here in the UK. According to the report in the UK weekly journal *Cage & Aviary Birds* (November 3rd, 2001), Bob McWha bought his first pair in 1992, and it is the male from that pair, which he has had for nine years, and a female that he got from the same dealer five years ago that have produced the youngster. After a number of infertile eggs over the past five years, the chick was reared from the pair's third clutch of eggs this year. Bob McWha puts his success down to the fact that he provides his birds with a stress-free environment and feeds them on his homemade nectar which is very similar to that used by Rod Elgar.

It is almost certainly the UK first breeding, though not the first European breeding, it having previously been bred in 1985 by Maria and Willi Hesse in Germany, and an account was published in *Die Gefiederte* 4: 94-96 (1986).

In the same issue of *Cage & Aviary Birds* , Rosemary Low described the breeding of the Verditer Flycatcher *Muscicapa thalassina* at Paradise Park, Hayle, Cornwall. The pair has been in the collection for over 10 years, but it was not until last year that four infertile eggs were laid. This year two young were hatched and hand-reared by Dale Jackson. It seems that this flycatcher has been bred in the UK at least once or twice before, but the Paradise Park breeding is the first published account.

* * *

CHICKS OF ENDANGERED OWL REARED

Two Ashy-faced Owl chicks *Tyto glaucops* have been hand-reared at Muncaster Castle, near Ravenglass, Cumbria, home of the World Owl Trust. The Ashy-faced Owl or Ashy-faced Barn Owl (formerly regarded as a subspecies of the Barn Owl *T. alba*) is an endangered species confined to Hispaniola and the tiny island of Tortuga in the Caribbean, where habitat loss and competition for territories and nest sites from the bigger and stronger North American Barn Owl *T. a. pratincola* are the main threats to its survival. The World Owl Trust's birds are part of a breeding programme for *T. glaucops*, started in Germany by SCRO (Society for Conservation and Research of Owls) and supported in the UK by the World Owl Trust and the International Owl Society. The Dominican Republic Owl Conservation Project recently completed two aviaries to house this species at the Parque Zoologico Nacional, Santo Domingo, capital of the Dominican Republic.

* * *

ENDANGERED PARROT COUNT

On Big Parrot Day 2001 in South Africa, a total of 358 Cape Parrots *Poicephalus robustus* were counted during the morning, and 319 during the afternoon. Not all of the forests were covered by the census, but in future years increased coverage of forest patches is planned, especially in parts of the former Transkei.

* * *

MYNAH PROBLEMS

Concern has been expressed about the increasing number of Common or Indian Mynahs *Acridotheres tristis* occurring in and around South Africa's Kruger National Park, and whether they may be carrying parasites or diseases that may affect the indigenous species. A 12-month study by the Australian Museum and University of Wollongong has found that the Common or Indian Mynah is found now in 80% of backyards and gardens across Sydney, Australia. Even more significant to the future well-being of smaller garden birds may be the spread of the native Noisy Miner *Manorina melanocephala*, which is found now in 89% of gardens in the northern suburbs of Sydney.

* * *

ANOTHER FIRST BREEDING

In 1994, San Diego Wild Animal Park received from Malaysia's Zoo Negara two pairs of Storm's Stork *Ciconia stormi* (previously regarded as the eastern subspecies of the Woolly-necked Stork *C. episcopus*). Storm's is the second rarest stork in the world (the rarest is the Greater Adjutant *Leptoptilos dubius*), with only an estimated 300-1,000 of these elusive storks, confined to the forest swamps and rivers of Malaysia, Borneo, Sumatra and Thailand. They were sent to the Zoological Society of San Diego because of its stork-breeding expertise. Now, after a long wait, four chicks have been hatched from two clutches of eggs. It is the first breeding of this rare stork in North America.

* * *

EXOTICS CONFERENCE

ICE2002 KEY WEST fourth annual international conference on exotics, will take place June 19th-22nd, at Wyndham Casa Marina Resort, Key West, Florida. Further information is available by writing to: PO. Box 541749, Lake Worth, Florida 33454-1749, USA. Tel: 800-946-4782/Fax: 561-641-0234/Website: www.EXOTICDVM.com

HIGH-ALTITUDE PARROTS

Emu Vol. 101, No. 3, 2001, Journal of the Royal Australasian Ornithologists Union, includes a paper by K. David Bishop and Darryl N. Jones on the montane avifauna of West New Britain, with special reference to the Nakanai Mountains. Where daily they observed large aggregations of Rainbow Lorikeets *Trichoglossus haematodus massena* together with Red-chinned Lorikeets *Charmosyna rubrigularis*, feeding at large trees that bore masses of yellow flowers. The authors heard and/or observed the Red-chinned Lorikeets in numbers of about 10-60, feeding at the flowering canopy trees or in noisy parties flying over the canopy, usually towards the summit. At higher altitudes the Red-chinned Lorikeet appears to generally replace the Red-flanked Lorikeet *C. placentis*, which occurs in the lowlands.

* * *

PRIDE OF PLACE

Occupying pride of place at Mareeba Tropical Savanna and Wetland Reserve visitor centre is an aviary, sponsored by the Australian Geographic Society, housing a breeding group of 27 Gouldian Finches *Erythrura gouldiae*. The Gouldian used to be common across the grasslands of northern Australia from Mareeba to the Kimberley but, since the 1960s has been in danger of extinction, and reserve staff hope to some time in the future release some into the reserve situated 50km (approx. 31 miles) west of Cairns.

Five years ago, this area close to the northern tip of the Cape York Peninsula was dry cattle scrub, destined to be logged and split into mango orchards and sugarcane plantations. However, the soil proved unsuitable for intensive farming, and the local community backed the idea of using surplus irrigation water to convert the land into a nature reserve, bird sanctuary and tourist venture.

Twelve lagoons were constructed, connected by creeks and channels set in 12 hectares (approx. 30 acres) of dry woodland, and the area has quickly become a wildlife paradise. One hundred and seventy-seven species of birds have been recorded, including the Great (White) Egret *Ardea alba*, Black-necked Stork *Ephippiorhynchus asiaticus*, Wandering Whistling Duck *Dendrocygna arcuata*, Radjah Shelduck *Tadorna radjah*, Brolga *Grus rubicundus*, Sarus Crane *G. antigone*, Comb-crested Jacana *Irediparra gallinacea* and Red-tailed Black Cockatoo *Calyptorhynchus banksii*.

The lagoons are already the most important Brolga roosting and nesting sites in the region. Freshwater crocodiles breed in some of the channels, and a release pen has been established for kangaroos and wallabies nursed back to health or reared by local volunteers.

PIGEON PAIR

Neville Brickell of the Indigenous Bird Breeders' Research Group in South Africa, reports what may be the first recorded colour mutations of the Cape Turtle Dove *Streptopelia capicola*. Chris Luther, a bird judge and



White and wild or normal type Cape Turtle Dove

pigeon and dove breeder for many years, has bred both white and fawn mutations of this species. In each clutch, one of the nestlings is of the wild or normal type and the other is either white or fawn. The white or fawn bird is always female and the wild or normal type is always male.

* * *

TWO IN A NEST

Also from Neville Brickell, the photo below, taken in South Africa by Brian Buchanan, shows the nest with two eggs of a pair of Three-banded Plovers *Charadrius tricollis*, which has been commandeered by a pair of



Brian Buchanan

Nest containing eggs of Blacksmith Plover (top)
and Three-banded Plover

Blacksmith Plovers *Vanellus armatus*, which has laid its two eggs alongside those of the Three-banded species.

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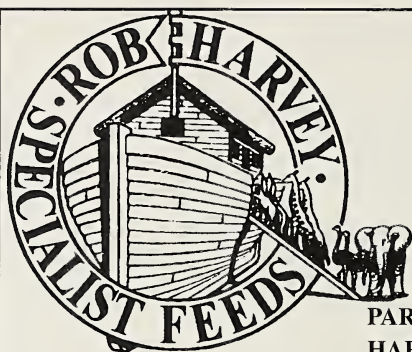
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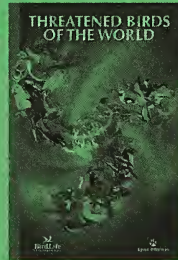
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PROTRACTED PROCEDURE

According to a report in *The Times* (December 10th) there have been several exchanges of letters between the Brazilian Embassy in London and the British Government and even an official note sent to the Foreign Office, concerning the extraordinary length of time being taken to return to Brazil three Lear's Macaws *Anodorhynchus leari* seized from Harry Sissen in April 1998 (see News & Views, Vol. 106, No.2, p.90, No.3, p.136 and No.4, inside back cover).

Boris Johnson MP raised the matter with the Attorney-General and also the Treasury Minister responsible for Customs and Excise, and demanded speedy repatriation of the birds. A customs spokesman said the government wishes to return the birds to Brazil but does not yet have legal ownership of them. Adding that Customs has to apply to the Crown Court for custody of anything that is seized and this can be a protracted procedure.

There is a blue macaws website: www.bluemacaws.org



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